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Garden and Forest.

Among the contents of next week's issue (No. 151) will be the following articles:

Christmas in "The Pines."
By Mrs. Mary Treat.

The Bartell Dewberry. (With figure.)
By Professor E. S. Goff.

A Hybrid Calanthe. (Illustrated.)

Forest-Management Abroad.—II.
By Gifford Pinchot.

The paper will contain an illustration of a Hybrid Calanthe, from a photograph, and a figure of Bartell's Dewberry, from a drawing by Mr. C. E. Faxon.

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TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—The White Oak. (With figures.)—Military Protection for Government Forests . . . 1
Old Methods of Preserving Seeds for Transportation. *George B. Sudworth.* 2
Cranberries in Wisconsin . . . 3
Notes on North American Trees.—XXI. . . . *Professor C. S. Sargent.* 4
NEW OR LITTLE KNOWN PLANTS:—New Orchids . . . *R. A. Rolfe.* 4
CULTURAL DEPARTMENT:—Notes on Some Hardy Wild Roses.—I. . . . *J. G. Jack.* 4
Pomological Candidates for Promotion . . . *T. H. Hoskins, M.D.* 5
The Pompone Lily . . . *E. O. Orpet.* 6
Dracæna Lindeni . . . 7
The Hardy Hydrangea as a Decorative Plant . . . *G.* 7
Clematis paniculata . . . *T. D. Hatfield.* 8
Peaches for Forcing . . . *John Thorpe.* 8
The Best Peaches . . . *W.* 8
THE FOREST:—Forest-policy Abroad.—I . . . *Gifford Pinchot.* 8
CORRESPONDENCE:—The Holiday Flower Trade in Philadelphia . . . *W. H. Taplin.* 9
Winter in Los Angeles . . . *E. D. Sturtevant.* 10
Cypripedium spectabile from Seed . . . *F. J. Le Moyne.* 10
PERIODICAL LITERATURE . . . 10
MEETINGS OF SOCIETIES:—The American Forestry Association . . . 11
NOTES . . . 12
ILLUSTRATIONS:—The White Oak (*Quercus alba*) in Winter, Fig. 1 . . . 6
The White Oak (*Quercus alba*) in Summer, Fig. 2 . . . 7

The White Oak.

OF the Oaks which inhabit the New World, the White Oak (*Quercus alba*) is most akin to the common and familiar tree of all European countries—the Oak of myths and of poetry, of Dodona and Hercynia, the tree which Celt and Briton worshiped, which 'shaded the Druids' sacred fire, and has in all times been the emblem of strength and longevity. And here in America, when we think or speak in a general way of an Oak-tree, it is the White Oak which naturally most often presents itself to the mind, as the leaves and fruit of this tree resemble more nearly than those of any of our other species the conventional Oak-leaves and acorns with which we have become familiar from childhood.

The American White Oak is a noble tree. In girth of stem and stoutness of branches it is not second to its Old World relative; and there are very few American Oaks which grow over such a wide stretch of country, or are so generally multiplied. The Burr Oak, perhaps, when it has grown under the most favorable conditions, produces timber which is stronger and more solid than that of the White Oak, but there is no American Oak which furnishes universally and over such large areas such a high quality of timber.

As it grows in the dense forests of the Alleghany Mountains, or of the valley of the lower Ohio, the White Oak sends up a tall and massive stem destitute of branches to a height sometimes of sixty or eighty feet, and crowned with a narrow head of comparatively small branches. In less favorable climates or on thinner soil it is a smaller tree, with a shorter trunk and larger branches, which extend laterally in proportion as the individual has found room for their development.

The White Oak owes its name to the color of the bark, which is light gray or sometimes nearly white on vigorous trees, with a surface broken into long, narrow, rather thin scales. The character of the surface is the same on young and on old trees, and only varies slightly in color on different individuals, and, as it is unlike the bark of any other Oak-tree of eastern America, it furnishes the most ready means for distinguishing this tree at a glance at all seasons of the year. The inner bark, as is the case with that of many other Oaks, possesses astringent properties, and has found a place in our materia medica in the form of decoctions.

The wood of the White Oak is very heavy, a cubic foot of dry wood of average quality weighing rather more than forty-six pounds; it is strong, hard, tough and close grained. The annual layers of growth are marked by numerous rows of the open ducts present more or less in all Oak-wood. The broad and prominent medullary rays are silvery white, and make a handsome contrast with the light brown color of the body of the wood.

The leaves of the White Oak when they first unfold are tinged with red and coated with silvery white tomentum. At this time, when the tree is covered also with its catkins of yellow flowers, the White Oak presents a beautiful appearance in the forest, and is perhaps more distinct and attractive than at any other season of the year. As the leaves grow they lose their hairy covering, and at maturity are quite smooth; they are obovate-oblong in general outline, and obliquely cut into three to nine obtuse, mostly entire lobes, which vary considerably on different trees in number and breadth and in the depth of the sinuses which separate them. These sometimes penetrate nearly to the midrib, making the leaf appear almost pinnatifid. The leaves when fully grown are six or eight inches long by two or three broad, and are borne on stout petioles. Late in the autumn, after the leaves of many of the trees with which the White Oak grows have begun to fall, they turn gradually first yellow and orange and then deep vinous red or sometimes bright scarlet. The brilliancy of their autumn coloring is retained for a long time, and, as the leaves die, they turn gradually brown and fall slowly, many remaining on the branches through the winter and until the buds of another year begin to open.

The sterile flowers, like those of our other Oaks, are produced in slender, naked, hanging catkins, which are single, or often several together from the same lateral scaly bud. The male flower consists of a lobed yellow calyx and six to eight stamens with conspicuous yellow anthers. The female flowers, which are composed of a three-lobed sessile stigma and a three-celled ovary enclosed by a scaly bud-like involucre which grows into the cup of the acorn, are solitary or clustered near the base of the shoots of the year. The fruit, like that of all the so-called White Oaks, ripens at the end of the first season. This character best distinguishes these trees from the so-called Black Oaks, which require two summers for the maturity of their fruit. The acorn when fully grown is sometimes an inch long, or often smaller at the north; it is slender, ovoid or oblong, chestnut brown, and enclosed for about one-third of its length in a pale, hemispherical, saucer-shaped cup, which is covered with tubercles at maturity. The fruit is sessile, or sometimes produced on slender stalks an inch or more long, the two forms appearing occasionally on the same tree—a peculiarity also of the Old World Oak.

The White Oak grows from northern Maine, Ontario and the lower peninsula of Michigan to the shores of Tampa Bay, in Florida. It ranges west to western Missouri and Arkansas, and to the valley of the Brazos River, in Texas. In some parts of this great region it forms more than half of the forest-growth. It is especially abundant in the group of states which contain the ranges of the southern Appalachian Mountains and in the valley of the middle portion of the Mississippi River. The White Oak grows on nearly all soils except those saturated with stagnant water. It attains its greatest size on the rich lands of river-bottoms, and produces in such situations its most valuable timber. Mr. Robert Ridgway, whose excellent observations upon the trees of the Lower Wabash and White River valleys, in Indiana, are published in the *Proceedings of the United States National Museum*, records the measurement of a

number of White Oaks produced on different soils. He found that the average trunk-diameter of ten trees growing on bottom-land was 4.59 feet, and that their average total height was 123.60 feet, while of seven trees growing on gravelly uplands in the same region the average trunk-diameter was 2.40 feet, and the average total height only 99.82 feet.

The White Oak was noticed by the earliest botanists who explored the North American flora. Bannister, the English minister, who died in Virginia in 1692, knew it; Clayton, whose Virginia plants were published by Gronovius, remarked on the resemblance of its leaves to those of the English Oak; and Catesby published in 1731, in his "Natural History of Carolina," the first portrait of the foliage and fruit of this tree. It is said to have been cultivated in England as early as 1724, and Michaux, late in the same century, sent great quantities of the acorns and young plants to enrich the forests of France. Such a valuable tree was naturally sought for by European planters, who a hundred years ago were keener than they are to-day in their search for exotic timber-trees. Efforts to grow it successfully in Europe have, however, always failed; and a good specimen of this or of any of the other American species of the White Oak group is probably not to be found there. The reason of this is not easily explained, for nearly all the Black Oaks, especially the Red Oak, the Scarlet Oak and the Pin Oak, grow rapidly and live as long in Europe as they do in this country. Here the White Oak, although it is a difficult tree to transplant, and is best grown from seed planted where the tree is to remain, grows very rapidly, and is one of the most desirable and ornamental of all our native trees for the embellishment of large parks and gardens.

The value of the White Oak from an economic point of view is not easily overestimated. It supplies the principal part of the American oak of commerce, and is very largely used throughout the country in ship-building, in all sorts of construction, in the manufacture of carriages and agricultural implements, for railway-ties, fencing, cabinet-making, the interior finish of buildings, and for cooperage, fuel, etc. For years it has been exported in immense quantities in the form of staves for wine and other casks, for which purpose there is a large and increasing demand for it in Europe, and in California, where no Oak furnishing wood suitable for this purpose grows. There are still great bodies of this timber standing in the United States, especially in western North and South Carolina and in eastern Tennessee and Kentucky and in Arkansas. Railroads, however, are penetrating these Oak-forests, which inaccessibility has thus far preserved from the axe of the lumberman and the settler. Every year the supply is becoming less, and if it is fair to judge of the future of our forests by their past, white oak as a great forest-product must eventually disappear. The time has already arrived when the White Oak is worth preserving. Few of our trees, indeed, better deserve care, especially as a danger more serious even than the axe is threatening to exterminate the White Oak in the very region where it grows naturally in the greatest abundance. The acorns of this tree, like those of the other Oaks with annual fructification, are, unfortunately, sweet, and are, therefore, hunted for and devoured by the hogs which are allowed to roam at will in great bands through the forests of the southern states. They eat the White Oak acorns and pass by the bitter fruit of the Black Oaks, which are, therefore, gradually getting possession of the soil and driving out more valuable species, so that it will be a question of time only, if the pasturage of the southern forests is continued, when their most valuable tree will disappear.

The density of the original forest-covering of eastern America prevented, except in rare cases, the growth of broad-branched, spreading trees such as we so much admire in some of the old forests and parks of England. There are exceptions, however, and fine old wide-spreading White Oaks are occasionally met with in the eastern states. Such trees are those at Waverly, in Massachusetts, which have already appeared in this journal (vol. iii., p. 81), and such is the tree which appears on pages 6 and 7 of the present issue. It is growing on the grounds of Mr. W. H. Fearing, near Jobstown, New Jersey; the diameter of the trunk is six feet at three feet from the ground, and the branches cover a circle 120 feet across. Larger trunks are not uncommon, but such a magnificent expanse of foliage is rare. The tree is fortunate, too, in having escaped mutilation by wind and storm. It has lost no large limbs, shows no dead or dying wood, and is in vigorous health. Altogether the tree is a fine example of what the White Oak can become under favorable conditions, and what character of trees the people who inhabit America three or four hundred years hence will have before their eyes if the present generation of planters plants wisely, and their descendants value trees for what they are worth and bestow upon them the care they deserve.

Dispatches from Washington state that Secretary Noble has asked the War Department for two companies of cavalry to protect the additions to the Yosemite Park and the Tulare Sequoia Reservation from the dangers that beset all Government forests when not under military control. The presence of troops has alone kept the forests and game of the Yellowstone Park from extermination, and no doubt the visible presence of the force of the Federal authority in the shape of armed and uniformed men will do much to prevent wanton destruction of the nation's property by fire and trespass of various kinds. In spite of the smallness of our army and the vast area over which our public forests are scattered, we still feel that these forests would be safer under the control of the army than under any other administration. As matters now stand, the army is the only force that will be likely to represent with any firmness the dignity of the nation against local interest, and against the right which herders and lumbermen, and, in fact, settlers of all kind, feel they have acquired by long usage, to cut or pasture or burn over the woods on the public lands as it may seem for their profit or pleasure to do so.

Old Methods of Preserving Seeds for Transportation.

The *Gentleman's Magazine* for 1760 and 1769 gives some interesting notes on the methods then employed in treating seeds for long voyages. Four methods are described, one as originating with Linnæus, and the other three with John Lewis, Esq., F.R.S.

Mr. Lewis' first method was tried with acorns of the English Oak, and consisted in wrapping the acorns separately in thin sheets of "common yellow bees-wax," warmed so as to be pliable; then adding a coating of "brewers' loam" moistened with a thick solution of gum-Arabic. The acorns were afterward placed in a "chip box," the interstices being filled with dry "house sand," and the box stowed away in a dry cask, from which, after nearly ten months, they were taken out (on arriving at Georgia) "in a state of vegetation, and being set, soon germinated and grew."

Spanish chestnuts were made to retain their germinating power for nearly a year on a sea voyage by pouring a melted mixture of bees-wax and mutton suet over the nuts in an earthen jar; and similarly by using pure bees-wax. Mr. Lewis laments, however, that in one instance, at least, a supply of chestnuts from Spain failed to grow under this process; but he subsequently learned that the nuts had been "thoroughly kiln-dried" to prevent their moulding on the voyage.

The third process tried is similar to the first, with the exception that the nuts were simply wrapped in small sheets of wax. The bottom of the box to contain the nuts was then covered with melted wax to a depth of an inch, and when the wax became partly cooled the nuts were packed in regular layers and the interstices of the last layer filled up with warm, pliable wax; a wooden cover was then secured over all. The acorns thus encased were placed in a dry closet for one year. At the end of this time they were transmitted for examination "to Mr. William Aiton, botanic gardener to Her Royal Highness the princess dowager of Wales at Kew." Mr. Lewis states that in a letter subsequently received from Aiton the

acorns were found to be in a good state of preservation and when planted germinated successfully.

Mr. Ellis remarks that the above methods may suffice for carrying seeds to and from the East Indies, but that they have not been sufficiently tested for larger voyages, and, therefore, recommends "to the curious" the following method contrived by Linnæus, "which has been tried," and, Linnæus affirms, "has never failed":

"Put the seeds in a cylindrical glass bottle, fill the interstices with dry sand to prevent their lying too close together and that they may perspire freely through the sand; then cork the bottle, or tie a bladder over its mouth. Then take a glass vessel so much larger than the one containing the seeds that when the latter is suspended in it there may be a vacant space on all sides of two inches between the two glasses, which must be filled with four-fifths of nitre and one-fifth of equal parts of common salt and sal-ammoniac, well pounded and mixed together. This saline mass, which should be rather moist, will always be so cold that the seeds in the inner glass will never suffer during their voyage from the heat of the sun."

Mr. Ellis concludes with these judicious words: "Perhaps Dr. Linnæus' method will answer the end. I think it worth the trial, especially as he assures us it never fails." To this the editor comments with some warmth: "This seems to be an insinuation to the prejudice of Linnæus' character, the publication of which the reader will the less approve when told that this very method was communicated by Linnæus in a letter to Mr. Ellis in consequence of Mr. Ellis having applied by letter to him for information on this subject."

Washington, D. C. *George B. Sudworth.*

Cranberries in Wisconsin.

IN former issues we have given at some length accounts of the Cranberry as it is cultivated in the bogs of Cape Cod and New Jersey. The following article on the Cranberry in Wisconsin was prepared by Professor Goff and published in a recent number of the *Farmer's Review*:

In several central counties of Wisconsin are extensive marshes, in which the Cranberry-plant is indigenous. From time immemorial the Indians of the country have feasted upon this grateful fruit in its season, and from the first settlement of those regions, farmers, lumbermen and others, at least in productive years, gathered their full winter's supply of cranberries from the spontaneous harvests. But not until the railway had penetrated these wilds did any quantity of the fruit ever reach an outside market, or were the rudest attempts made at improving the marshes, or at introducing the most primitive culture. The crop borne, bountiful in some seasons and very scanty in others, was entirely at the mercy of the elements. When these were favorable the ungathered harvest returned to the soil that gave it by the thousand bushels. But fire or drought or untimely frosts often so far cut off the yield that only the leisurely Indian found time or patience to avail himself of it. It is scarcely more than twenty years since the first systematic attempts were made at improving these extensive marshes, or at gathering the fruit on a commercial scale. A few years previous to 1870 interest began to be awakened in Cranberry-culture in the vicinity of Berlin, in the eastern part of the state, and the more available tracts of Cranberry-land began to be improved in a primitive way by clearing out brush and fallen trees and excavating ditches for the better control of the water. A few years later (about 1873) railroads were extended eastward and west across the central part of the state, which opened up hundreds of square miles of native Cranberry-marshes. The success that had been attained in the neighborhood of Berlin gave a stimulus to the industry in this new field, and soon capital and enterprise began to be attracted there.

From that time to the present the business has shown a gradual, but tolerably steady advance, both in the area cultivated and in the methods, until at last the output of cranberries in the average season amounts to about 5,000 barrels. The greater part of this aggregate, however, is as yet gathered from wholly unimproved marshes. How long this increase will continue it is impossible to estimate. The market for cranberries may be considered as almost unlimited, and if all the Wisconsin marshes were available for improvement the present annual product might be multiplied by thousands. But while one may in places ramble ten miles in a straight line over continuous native Cranberry marshes, the conditions are such that only the areas lying near the railroads can be profitably improved. Owing to the quaggy nature of the soil of the marshes horses are scarcely available either for traffic or labor, and it will only be after the construction of costly roads that the marshes located at a distance from the railways can be utilized. At present the locations adjoining the railroads that are fortunately situated as regards water supply are for the most part in a fair state of improvement.

The methods of culture practiced in Wisconsin are of a much more primitive kind than those in use at Cape Cod and in New Jersey. Very few of the Wisconsin marshes that are considered improved have ever been systematically planted. The "improvements" consist simply in clearing out foreign rubbish and in ditching the ground, so that the water may be under some system of control. Very few of the marshes have conveniences for flooding at pleasure, and the number that have been "turfed" and systematically planted is perhaps still smaller. The "turfing" consists in breaking up the tough sod of the marshes at a dry time, and piling the turf into heaps for burning. This destroys most of the native plants that interfere with the growth of the Cranberry-shrub, and leaves the ground in a smooth condition for planting. The process of sanding the marshes, so common in the east, has scarcely been attempted in Wisconsin. Sand is rarely sufficiently available in the marshes to make the expense warrantable, and it is, indeed, a question if much would be gained by the process. The comparatively few Cranberry-beds that have been planted in Wisconsin have been set with the native plants of the locality. Little attention has as yet been paid to varieties. In the Berlin district a very large and fine bugle-shaped variety is native and has been considerably planted in that part of the state. In the marshes situated in the more western districts this variety abounds to some extent, but is so much mixed with others as to render the separation of the plants a difficult task. I was informed by persons who are familiar with the Cape Cod and New Jersey marshes that nearly all the varieties grown there are to be found wild in Wisconsin.

It cannot be denied that the northern latitude and the consequent danger of early frosts is a drawback to Cranberry culture in Wisconsin. But experience shows that this drawback is by no means fatal to success. In the more improved marshes, where the ground is kept free from grass, and so becomes, to some extent, warmed by the sun, frosts are found to be less injurious than in the wild ones. Where the marshes can be promptly flooded, injury from frosts may be effectually prevented, and some of the other means that have been tried to prevent frost injuries promise good results. One of these, used the past season on the extensive marshes of Messrs. S. & A. S. Mills, at Millsonia, Monroe County, is especially promising and worthy of being described in detail. The hay that is cut during the summer upon the embankments along the ditches is left in small piles, where it partially dries and partially decays. By the time the frosty season arrives this hay is in just the condition to burn gradually, with a great deal of smoke and vapor. But the use of smoke as a preventive of frost is by no means new. The part that is original with the Messrs. Mills is the means used to compel the smoke to drift over the marshes instead of being wafted away by the breezes, as so often happens where this method is tried. A large number of campaign torches are set up at distances of a few yards from each other throughout the central part of the marsh, and as the wet-bulb thermometer gives its frost warning, the grass piles and the torches are lighted simultaneously. The heat generated by the torches is soon sufficient to start an upward current of air at the centre of the marsh, which immediately causes an inward counter current at the surface of the ground. This wafts the smoke, steam and warmed air from the grass-fires around the borders of the marsh inward toward its centre, and the result is that the marsh is hovered over by something of the nature of a thin summer cloud.

While it cannot be claimed that this method of protection from frost has been sufficiently tested, it was used the past autumn on the marshes of the Messrs. Mills with apparently complete success. The torches possess one important advantage over the other means that have been proposed for preventing frost by means of fire, viz., they can be used amid growing crops without in the least endangering them. If it must be confessed that the methods of the Wisconsin Cranberry-growers are somewhat of the slipshod order as compared with the more prim and expensive practice of the Eastern fraternity, it must be admitted that the growers themselves are not lacking in enterprise when the main question is at stake. They have a wide-awake State Association which holds its annual meeting in August to form estimates of the yield and agree upon a schedule of prices. To show that these estimates are more than haphazard guesses, I mention that in the scant cranberry-crop of 1889, the total estimates,

which amounted to something more than 20,000 barrels, were within 16 barrels of the actual output of cranberries for the year, and the estimates of the previous year were nearly accurate. No good reason appears why the cranberry interest of Wisconsin should not, when fully developed, rival any other interest of this progressive state. Already the importance of the industry is attracting eastern capital to some extent, and as new railroads open up tracts of Cranberry-land not yet available for improvement, the business will unquestionably be much extended. The fine keeping quality and color of the Wisconsin fruit is rapidly making for it a place in the markets, while the ease with which the marshes are improved and cared for will render successful competition with the more limited Cranberry-regions of the older states a comparatively easy matter.

Notes on North American Trees.—XXI.

A south Florida and West Indian tree which has often been referred to *Myginda integrifolia* of Lamarck differs in such important characters from the other species of this genus, as Kunth and Grisebach pointed out long ago, that it hardly seems possible to unite it with them without greatly emending the characters of the genus as generally limited to receive it. The unisexual flowers, cup-shaped, fleshy disc, two-celled ovary, suspended ovules and seed, appear to sufficiently distinguish this plant generically; and I should propose for it the name of Gyminda,* the name of a section of Myginda established by Grisebach (*Cat. Pl. Cub.* 55) for our plant.

The genus is an anomalous one with many affinities, as Kunth pointed out, with *Ilicineæ*, from which, however, the prominent cup-shaped disc of the flower and the opposite leaves separate it; while it differs from all the American *Celastraceæ* in its solitary suspended ovules.

A specific name must be found, too, for an examination of the specimen (without flower and with a single fruit only) in Lamarck's herbarium, now in the Museum in Paris, upon which he founded his *Myginda integrifolia*, shows that it is not a Myginda at all but the *Rhamnus ferrea* of Vahl now referred to Condalia by Grisebach, so that *Myginda integrifolia* must become a synonym of that plant. Nothing, therefore, stands in the way of associating with our tree the name of the distinguished botanist Grisebach, who appears first to have understood its peculiar structure and monotypic character. The rather complicated synonymy of this plant as I now understand it is:

Gyminda Grisebachii.

Myginda integrifolia, HBK., *Nov. Gen. & Spec.* vii. 66 (not Lamarck, *Dict.* iv. 368).—De Candolle, *Prodr.* ii. 243.—Grisebach, *Cat. Pl. Cub.* 55.—Sargent, *Bot. Gazette*, xi. 314.—Trelease, *Proc. St. Louis Acad.* v.

M. pallens, Sargent, *Forest Trees N. Am. 10th Census U. S.* ix. 38 (not Smith).

M. latifolia, Chapman, *Fl. S. States*, 76 (not Swartz).—Trelease, *Trans. St. Louis Acad.* v.

There is a form with rather smaller and more broadly obovate, thinner and very glaucous leaves, found in Cuba by Charles Wright (No. 81*) and distinguished by Grisebach as *Myginda integrifolia glaucescens*. For this *Gyminda Grisebachii*, var. *glaucescens*, would be the varietal name.

The Florida Myginda (Palmer, Key West, 1874, No. 81; Curtiss, No Name Key), referred usually to *M. pallens*, Smith (see Chapman, *Fl. Southern States*, Suppl., 612.—Trelease, *Proc. St. Louis Acad.* v.), turns out to be *M. latifolia* of Swartz, to which, I suspect, Smith's plant also belongs. Professor Wittrock, of Stockholm, has most obligingly compared a specimen of the Florida plant with the type of *M. latifolia* preserved in Swartz's herbarium and finds them identical; and his conclusions are confirmed by a leaf from Swartz's plant with which I have been favored.

C. S. Sargent.

Gyminda, Nov. gen. Celastracearum. Flores dioici. Calyx parvus, tubo brevi urceolato, lobis 4, rotundatis. Discus cupularis, crassus, 4-lobus. Petala 4, rotundata, reflexa. Stamina 4, inter disci lobos inserta; filamentis subulatis, incurvis, excertis; antheræ oblongæ, introrsæ, 2-locularæ, loculis confluentibus, longitudinaliter dehiscentibus. Ovarium, oblongum, sessile, cum disco confluens, 2-loculare; stylus 0; stigma terminale, 2-lobatum; ovula, in loculis solitaria, ab apice loculi pendula; raphe dorsalis. Fructus parvus, obovatus, drupaceous, carne parca, putamine crustaceo, 2-loculari. Semina pendula; testa membranacea, albumine carnoso. Embryo linearis, axilis; cotyledones ovatæ, amplæ; radicula supera, hilo proxima.

Frutex vel arbor glabra. Folia opposita, oblongo-ovata, ad apice rotundata vel emarginata, integerrima, vel crenata, margine crasso revoluto, brevita petiolata, coriacea, sempervirentia. Stipulæ parvæ, caduceæ. Flores bi-bracteatæ minuti, subcymosi, pedunculis, axillaribus, dichatome pauci-floris. Fructus nigrus vel coerulescens. Species unica. Antillana et Floridana.

Gyminda Grisebachii.

New or Little Known Plants.

New Orchids.

Cattleya granulosa, var. Buyssoniana, O'Brien, is a beautiful variety with ivory-white sepals and petals, and the front lobe of the lip rose-crimson, with some yellowish markings. A plant was exhibited by Messrs. Linden, L'Horticulture Internationale, Brussels, at a meeting of the Royal Horticultural Society on October 14th last, when it received an award of merit.—*Gardeners' Chronicle*, October 18th, p. 447, and November 22d, pp. 588, 589, Fig. 116.

Dendrobium × Cassiope, Rolfe, is a very pretty little hybrid raised by Mr. Norman C. Cookson, of Wylam-on-Tyne, from *D. Japonicum* fertilized with the pollen of *D. nobile ablifiorum*. The flowers are pure white, with a clear maroon-purple throat to the lip. It can well be compared with *D.* × *euosmum* and *D.* × *endocharis*, two of the most elegant little hybrids yet raised.—*Gardeners' Chronicle*, November 29th, p. 620.

Cattleya superba, var. alba, Rolfe, is a most beautiful pure white variety, discovered and cultivated by Mr. Edward S. Rand, of Parà, Brazil. It is to be hoped that a stock of it will in time appear.—*Gardeners' Chronicle*, November 29th, p. 620.

Cypripedium × Arnoldianum, Manda, is a distinct and pretty hybrid raised from *C. superbiens* and *C. concolor* by Joseph Manda, Jr., of Short Hills, New Jersey, U. S. A. It is said to have flowered when less than two years old, the quickest time on record for a Cypripedium. The flowers are lemon-yellow, with vinous purple nerves on the dorsal sepal, some dark spots on the petals, and some deep vinous purple veins and dottings on the front of the lip. The staminode is lemon-yellow with purple border.—*Gardeners' Chronicle*, November 29th, pp. 632, 633, Fig. 123.

Cirrhopetalum Mastersianum, Rolfe, is a pretty little species introduced from the Dutch Indies by Messrs. Linden, L'Horticulture Internationale, Brussels. It is allied to *C. gamosepalum*, Griff. The peduncles are reddish crimson and the flowers orange-yellow, with brownish crimson lines, except on the upper half of the lateral sepals; the lip is purple-brown.—*Lindenia*, vi., p. 33, *t.* 255.

Kew. *R. A. Rolfe.*

Cultural Department.

Notes on Some Hardy Wild Roses.—I.

In a standard work on Roses, by an eminent authority and pleasant and entertaining writer, the wild type of our Roses is spoken of as "fit only for the road-side." But this statement was made before the general introduction of that exceedingly hardy and handsome species, the *Rosa rugosa*, from Japan, and its still more beautiful white variety known as *Rosa rugosa alba*. A typical Wild Rose may be said to be any single flowered wild species which has not become much changed or modified by cultivation or artificial treatment at the hands of man. Semi-double forms and plants having unusual peculiarities are sometimes found growing wild, but they are exceptional, and, as a rule, abnormal. Although always admired and sought for and furnishing a theme for many a poem and homily, these single species remain comparatively rare in our gardens, being quite supplanted by the vast number of hybrids and other double Roses of artificial origin. But besides their chaste beauty of flower, some of the single species have another recommendation in the bright colored fruit which they show in the autumn, whereas the double flowered garden varieties generally produce no hips.

The Wild Roses are all, apparently, easy of cultivation in good garden soil; but a few may seem more at home and give more satisfaction under exceptional conditions. As a rule, all of them may be safely and exactly reproduced or propagated, according to their kind, by seed. If, however, it is desirable to perpetuate a peculiarity of color, a free-flowering habit, large blossoms, or any other characteristic of any individual plant, it should be propagated by cuttings or layers and not by seed. Some species form new roots very readily,

while others demand a little trouble and care in the production of new plants by division.

Grafting or budding of Wild Roses should be avoided as being of little utility and likely to perplex the amateur.

There has been much confusion and diversity of opinion among different botanists regarding the limitations and the number of natural species of the Roses of the world, some writers reducing the number of species to a score or two, while others have divided them into several hundred specifically distinct kinds. So many of these Wild Roses resemble one another so closely that there seems to be strong grounds for keeping only a limited number of specific names, many intermediate forms being referable to some typical characteristic species.

Some of the largest-blossomed and most beautiful of these single-flowered Roses are not hardy in such a rigorous climate as that of New England, but in our southern states they are or may be perfectly hardy and at home.

Among recent studies of Wild Roses by rhodologists certainly none are more thorough than those by Professor F. Crépin, of Brussels, who has devoted many years to a careful study of this genus. In his classification he divides all the species into a number of groups or sections, chiefly according to the characters and affinities of their flowers and fruit. As already stated, it is not always easy to determine the species of these plants. A student of the American Wild Roses, Dr. G. N. Best, very truly says: "Few plants are more strikingly modified by differences in environment than Roses. Even the younger growths appear quite different from the older, so much so indeed as to cause them to be taken for different species. A knowledge, therefore, of the value of characters is desirable. Quite contrary to what was once thought, the varying degrees of pubescence, glaucousness, glandulosity, and, to some extent, of prickles, possess little diagnostic value, and are to be considered most frequently as accidents of growth depending on peculiarities of soil and location for their development. Not that they are wholly devoid of value, but are so only when taken in connection with characters of the first order. . . . In rank bushes the spines may be stout and curved, in depauperate and slender, straight, and yet belong to the same species. They are frequently absent from bushes to which they normally belong, and this from no known cause." Such variations are liable to become more marked under a long term of garden cultivation, especially in regard to the size and vigor of all the parts of the plants. Where a large number of species are grown together it would seem that foreign pollen must sometimes have an influence on some of the seedlings of an allied species and natural hybrids be the result. In botanic gardens, where pure seed of any good species is desired, it would be well to protect the blossoms from visitations by insects, some of which are industrious collectors of the pollen.

One of the largest groups of wild Roses is that to which the old-fashioned Cinnamon Rose belongs. The single-flowered type of the Cinnamon Rose (*Rosa cinnamomea*) is a native of Europe and northern Asia. It is perfectly hardy where the thermometer registers thirty degrees below zero. The blossoms are of good size, fragrant, and in color like the double-flowered form which has been grown in gardens for centuries. This form has been neglected since the advent of so many finer double garden Roses. In some places it has escaped from cultivation and is found away from any building, covering considerable patches of ground by gradual spreading from underground shoots. *Rosa cinnamomea* is an early flowering species; but one of the earliest, if not the very earliest, of wild Roses to bloom here is *Rosa acicularis*, a species common in northern Europe and Asia and also indigenous in America. This may be made to include the *Rosa Engelmanni* figured on p. 377 of the second volume of GARDEN AND FOREST, or the *R. acicularis*, var. *Bourgeauiana*, as it was first named by Crépin. Under cultivation *Rosa acicularis* is an erect, vigorous bush from six to eight feet high, with stems and branches usually quite thickly covered with rather slender prickles. In this region the first of the large rosy pink flowers often expand as early as the 15th or 20th of May, and the fruit which follows ripens and becomes bright red in the latter part of August. It is a very hardy plant and blooms freely. It does not appear to have given origin to any double garden forms or to have been used much in artificial cross-fertilizing.

Rosa alpina, from Europe, has much the same habit and stature as the last species, and its flowers are hardly distinguishable and seem almost equally early. It is, however, comparatively unarmed and bears very few prickles. A number of double varieties have been derived from this species, and it is said to have been one of the parents of the old climbing, double-flowering kinds known as the Boursault Roses.

Rosa Beggeriana is an Asiatic species, which, although hardy, has not yet shown great vigor or long life here. It attains a height of five or six feet, and is erect, with slender branches which seem insufficiently covered by the foliage. It has slender spines, and the flowering branches are quite smooth and without prickles. The delicate pearly white blossoms are not large, averaging about an inch and a half across, and they are pleasantly fragrant. The fruit is small, round, and dark red in color. The regular blooming of the plant begins about the second week of June, but a few flowers continue to appear throughout the summer, imitating the habit of *Rosa rugosa*. Although the few stray flowers do not make much of a show, the habit may be further developed by selection, and the species is one which may yield some interesting hybrids. Professor Crépin states that there is a double variety of this in cultivation in the gardens of Turkistan.

Arnold Arboretum. *J. G. Jack.*

Pomological Candidates for Promotion.

IF, in the near future, it should seem good to the members of the American Pomological Society to revise its fruit list, with the purpose of amending and enlarging that portion of it allotted to the "best" apples, it would be well that the apple culturists of the continent should begin now to consider the subject, and make known their opinions. It seems to me that the state and provincial lists ought really to be made the basis of the continental list. In this way would be removed the anomaly of a list like the present, which contains so few varieties other than those of the north-eastern states. Surely the south, the west and the Pacific coast ought to be heard from; and even in the north and east there may be apples better entitled to the highest place than some of the present list.

It will be urged that time is required before any variety should be promoted to the highest place. Certainly, time enough should be allowed to permit a majority of the members of the Society to have some adequate knowledge in regard to fruits put forward as candidates for this award. But this need not be very long, when it is so easy in a few years to acquire the necessary acquaintance with such fruits. It must be determined, also, whether high dessert quality alone, without reference to thrift, productiveness and commercial value, is to be sufficient. Some of our finest apples are strictly garden sorts, requiring high culture and special treatment to fully develop their merits. But in these times such a need does not exclude a fruit from commerce. The great improvement which has taken place in our market gardens can be and is being extended to our orchards; and choice varieties, well grown and properly handled, can be made commercially profitable in the hands of competent growers, provided that they join to excellent flavor the other market qualities in a reasonable degree. If, however, a variety is absolutely unprofitable, and cannot be grown except as apricots are grown on our Atlantic slopes, it certainly is open to doubt its admissibility to the list of best apples on the mere quality of the fruit.

It ought to be in order, also, to inquire why sweet apples are excluded from the highest place. We have not excluded other fruits for this cause. On the contrary, sweetness is an acknowledged merit in our grapes, plums, oranges, peaches, strawberries and many other fruits. Mere sweetness, unaccompanied with other definite and acceptable flavor, may not be thought to entitle an apple to the highest place. But a considerable number of our sweet apples possess marked excellence of flavor other than saccharinity, if I may be allowed to use the term.

Further, it may be questioned whether it should be required that an apple be found "best" in every part of a country so large as this. If growers over a considerable section, or even of a single state, are unanimous in claiming this position for any of their choice fruits it should be allowed. Practically, this was the course taken in making up the present list, which was mainly done when the attendance was chiefly from eastern states.

I have been at the pains of drawing off and classifying carefully the apples rated by Downing as "very good," "very good to best" and "best" in his "Fruits and Fruit Trees of America." A considerable proportion of the apples described are given no rating; and those in the second appendix, though the quality is frequently spoken of, are not rated by this otherwise general system. A few varieties termed "excellent" I have included under the head of "very good," though it might be inferred that they are entitled to a higher rating. I here

append the names of the apples in the two higher lists, "very good to best" and "best," out of which (but not exclusively) I think a considerable number might be taken which are every way equal to some in the Society's list of "best." There are apples in the "very good" (and even in the "good") list which I believe worthy of the highest rank as dessert apples; but I recognize the fact that it is well to be chary in this matter rather than to err in the other direction. I give also the season (Summer, Fall, Early Winter, Late Winter, etc.) and the state where known. The following list comprises Downing's "best": American Golden Russet, W.; American Summer Pearmain, S.; Early Joe, S., New York; Esopus Spitzenburgh, W., New York; Garden Royal, E. F., Massachusetts; Green Newtown Pippin, L. W., New York; Jonathan, W., New York; Melon, W., New York; Mother, E. W., Massachusetts; Newtown Spitzenburgh, W., New York; Yellow Newtown Pippin, W. There are eleven in number, and except two, of which the origin is uncertain, they are all from two states. It is observable that Downing rarely expresses a definite opinion of the quality of fruits with which he is not somewhat familiar.

Downing's "very good to best" follows: Buckingham, E. W.; Canada Reinette, W., Quebec; Cogswell, W., Connecticut; Dyer, F.; Early Harvest, S.; Ellsworth, W., New York; Fall Pippin, L. F.; Fall Wine, F.; Fameuse, L. F., Quebec; Geneva Pippin, L. W., New York; Golay, L. W., Indiana; Grimes' Golden, W., Virginia; Haskell Sweet, F., Massachusetts; Higby Sweet, W., Ohio; Hubbardston Nonesuch, W., Massachusetts; Hunt Russet, L. W., Massachusetts; King of Tompkins, W., New Jersey; Lady's Sweet, L. W.; Long Island Pippin, W.; Mangum, F.; Monmouth Pippin, W., New Jersey; Peck's Pleasant, W., Rhode Island; Pomme Grise D'Or, W., Ontario; Primate, F.; Red Canada, L. W.; Rochester Pippin, W., New York; Summer Rose, S.; Swaar, W., New York; Wagener, W., New York; Westfield Seek-no-Further, W., Connecticut; White Pippin, W.

This list, it will be noted, contains three sweet apples; of one of them, the Lady's Sweet, he says: "We consider this one of the finest winter sweet apples for the dessert yet known or cultivated in this country. Its handsome appearance, delightful perfume, sprightly flavor, and the long time it remains in perfection, render it universally admired wherever it is known, and no garden should be without it." Of the Haskell, or "Sassafras," Sweet, he says, "tender, juicy, very sweet, rich, aromatic."

It cannot be doubted that there now exist many excellent apples of local fame which are not yet on record in our books of pomology. In a number of states there has been no systematic effort made to search out and place upon record the merits of their native apples; while in others where, in time past, lists have been made, varieties old and new in large numbers remain which have never fallen under the notice of pomologists, yet which may possess very valuable qualities. Is it not time that stronger efforts should be made to make our lists and estimates more complete and more exact?

Newport, Vt. *T. H. Hoskins.*

Fig. 1.—The White Oak (*Quercus alba*) in Winter.—See page 2.

The Pompone Lily.

OF the long list of Lilies in cultivation there are but few that are really hardy and reliable for out-door cultivation here in the eastern states, and of those that are satisfactory the greater portion are late-fall blooming kinds. It is also true that the early summer flowering Lilies are fewer still in number and may be easily counted. *L. pomponium* is one of the most reliable of Lilies; it is perfectly hardy in a well-drained, porous soil; the flowering period is June; the color of the flowers is similar to that of *L. tenuifolium*, the Siberian Lily—that is, bright scarlet, with just a tinge of orange—but, while *L. tenuifolium* rarely has more than one flower to the stem and is a most difficult bulb to keep, *L. pomponium* grows three feet high and often has from twenty to thirty flowers to a stem, and these are very fragrant. *L. pomponium* is a native of northern Italy and southern France, but, as before stated, is perfectly hardy. This Lily is often catalogued as *L. pomponium verum* to distinguish it from *L. pomponium aureum* of Dutch growers, which is very similar to it, but has yellow flowers. These flowers are also fragrant, and the plant has much larger bulbs, which are generally difficult to keep. This Lily is known to botanists as *L. Pyrenaicum*, a native of the Pyrenees, and is quite a different plant from the one under notice. It should, perhaps, be added that, after flowering, *L. pomponium* dies down about the end of July, to reappear early the next spring.

While on the subject of early-flowering Lilies, one cannot

refrain from saying a word in favor of *L. Hansoni*, a beautiful Japan species, named after an enthusiastic American cultivator of Lilies with whom this species first flowered. Descriptions of the flower of this Lily differ as to color; we, however, have always found it to be of a bright yellow, with dull purple spots. Its petals are remarkably thick in texture, which makes the flowers very lasting. This Lily also is perfectly hardy and of easy cultivation, and when grown well often attains a height of four to five feet, the leaves being disposed in dense whorls the whole length of the stem. This also is a distinct Lily, flowering in June, lasting long in bloom, and a plant with which we have never had any difficulty in cultivating. On the contrary, the bulbs increase rapidly when established.

South Lancaster, Mass. *E. O. Orpet.*

Dracæna Lindeni.

THIS is one of the most useful foliage plants that has been introduced during recent years. It lasts a considerable time in rooms without injury, and will bear the temperature and conditions of the conservatory from April until October, or longer if the temperature of that structure does not fall below fifty degrees. Although it will bear for a long time shady positions in rooms and in the conservatory, it does much better and lasts longer where a fairly light position can be accorded it. Highly colored specimens are handsome, but poorly colored ones are ordinary in appearance, and in this condition the plant has not much to recommend it. Success in having the plants a good color or the reverse depends solely upon the treatment they receive. Many have been unsuccessful in this respect through growing the plant in too warm a temperature. In a close stove the plant either becomes green or a sickly yellow, and is destitute of those beautiful markings which render it so conspicuous. Plants that are in this condition will, if removed to a lower temperature, soon develop colored leaves. An intermediate temperature appears to suit it best, although it does not grow so rapidly as under stove treatment. This does not matter materially as long as well colored examples can be produced, for if once they are developed they last a considerable time, and in light sunny positions in rooms we have known them to grow and improve. Plants that were taken into the dwelling-house in June are still there, and will last for some months longer in a presentable condition, when they will be cut up for stock.

This Dracæna does not require to be fully exposed to the sun, but it is by no means particular as to the amount of shade. The temperature appears to be the main factor of importance, whether the foliage colors or not. Even if heavily shaded in a moderately low temperature it colors well. We have this season discovered that it is at home even in a late vinery where the foliage was moderately thin and the air admitted liberally. To develop fine specimens they should never have insufficient root room from the time heads or cuttings are rooted. Pot them from time to time, until they are placed into ten-inch pots, if large, well developed plants are needed. This size is none too large, although the plant can effectively be used for decoration in any size down to two-inch pots. We have found it succeed admirably when potted firmly in a compost of fibry loam, sand and one-seventh of decayed manure.

It has been said that this Dracæna cannot be propagated rapidly enough for general purposes of decoration, and this is true if one system, and a general one, only is practiced. After taking off the head, which sometimes flowers after the plants have been root-bound and checked to wait for side shoots, which are produced one by one at intervals of time, is too slow. A quicker way is to cut up the stem into lengths of about three inches and insert them singly in small pots with sand at the base and plunge them in bottom heat. These soon break into growth, and, when large enough, the young should be taken off and re-rooted. By this means numbers are produced in little more time than one or two would be secured from the stem when allowed to break from the top in a natural manner. Plants of this nature when they bear conservatory treatment during the summer are invaluable in assisting to change the character of that structure.—*Journal of Horticulture.*

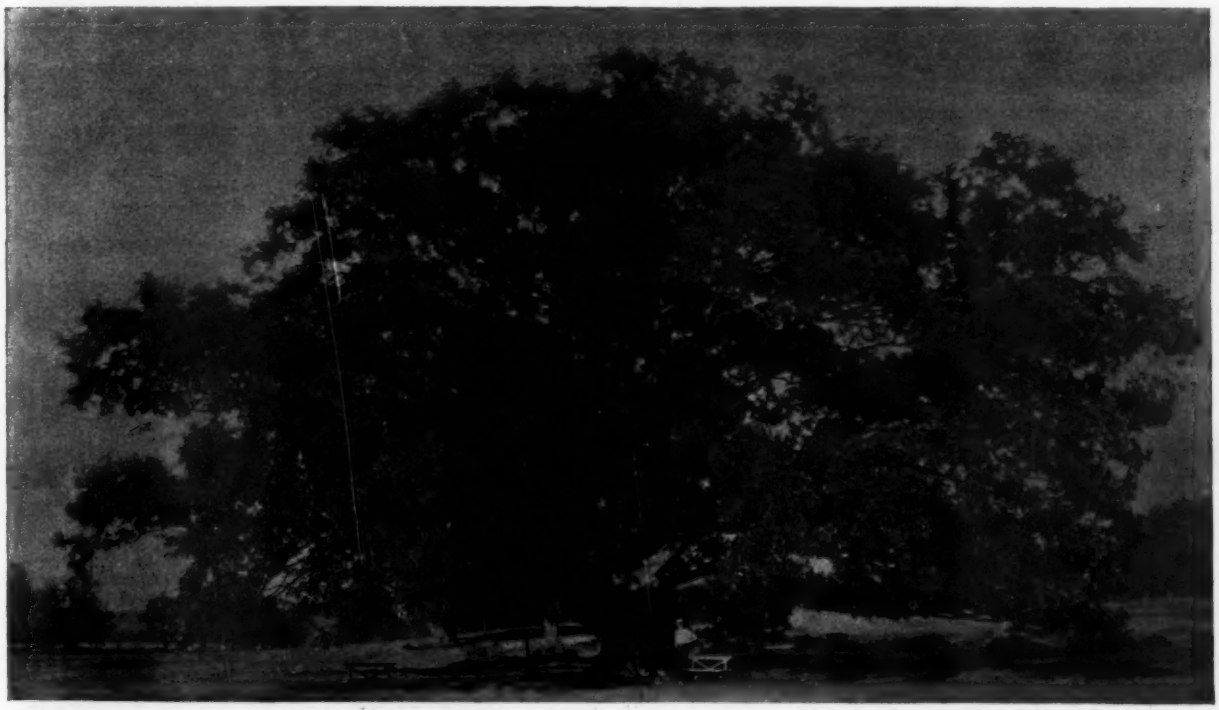

Fig. 2.—The White Oak (*Quercus alba*) in Summer.—See page 2.

The Hardy Hydrangea as a Decorative Plant.

WHEN walking through village streets one is often tempted to wish that nurserymen had not been so successful in introducing certain plants. A plant may be beautiful or satisfactory in itself, or when properly placed, and yet produce an unpleasing effect on account of its surroundings. A case in point is *Hydrangea paniculata grandiflora*, a valuable and showy shrub, which is pleasing enough when appropriately placed. This shrub is so readily propagated that it has proved a very profitable plant for the grower, and the result is that it has been the most largely distributed shrub of recent years. In certain streets one will find on the average

about every other lawn, large or small, decorated with one or more of these vigorous bushes, and the effect of the great masses of lumpy heads of white flowers in late summer so frequently repeated, is, to say the least, not very pleasing. These plants make rather rapid growth, and one sees many large masses even in small gardens, where they are often the pride of the owner; but, nevertheless, they do not favorably impress some casual passers-by.

My neighbor, who cultivates a small garden, treated this plant to better purpose last summer, and made a most effective group with it in combination with so-called "foliage plants." He struck, during the early spring, shoots about a foot long, of the Hydrangea, which were planted out at intervals near the grass-border and backed by dwarf Cannas and annual Euphorbias. Some low growing Snapdragons or similar flowering plants occupied the spaces toward the front and gave flashes of color during the season. In late summer the drooping heads of the Hydrangea flowered low, and were relieved by the background and surrounding masses of foliage. The whole effect, with glints of color from Cannas and other flowers, was cheerful, but quiet withal and in excellent taste for a moderate sized lawn. Frequent propagation from cuttings would, of course, require more care than many small growers are willing to take, but it would seem that these small cuttings would often be useful in many positions where the large standards were not satisfactory.

The Annual Euphorbia, *E. heterophylla*, to which allusion has been made, is a half hardy annual from Mexico, and it is also said to occur in south Florida. The plant is readily grown from seeds, is about three feet tall, branching, and with deep green, fiddle-shaped leaves. In late summer the bases of the leaves become a bright scarlet color, but only over a small section in the specimens I have observed. Judging from these it is far from being the brilliant and effective plant that was claimed when it was introduced as a novelty in 1889.

Elizabeth, N. J. *G.*

Clematis paniculata.—About the same time that Mr. Orpet had achieved success in grafting this valuable plant, I succeeded in raising over 200 of them from seed, and these have been distributed through the United States. I have always found it to ripen seed freely, but the seed is slow to germinate. It is better to sow it in the autumn, since nearly a year is saved by so doing. Spring sown seeds do not come up in any quantity until the spring following. When once started the plants grow rapidly and bloom at two years old. This Clematis comes perfectly true from seed, indeed this could hardly be otherwise, as no native allied species bloom at the same season. Seedlings, however, vary a little, and among ours is one superior variety. While time is saved by grafting, I yet think that when a species can be perpetuated by seed it is the best way. This is a well known fact with regard to plants from foreign countries having a milder climate, since much is gained in the way of acclimatization. This climber grows rapidly to a height of fifteen to twenty feet; but as the stems are woody and persistent, the lower part of the plant is apt to become bare. I would, therefore, advise pruning some part of it back yearly in order to keep it well furnished.

Wellesley, Mass. *T. D. Hatfield.*

Peaches for Forcing.—One-year-old plants should be obtained now and placed singly in fourteen-inch pots, or in boxes, two or more in each box, protected in some outhouse for two months and then taken into a greenhouse where the temperature is kept not warmer than fifty degrees at night. They will need syringing twice a day, and the top shoots, as soon as they are three inches long, should be pinched back to three leaves. This will give the lower shoots a slight advantage and balance the growth generally. Of course it is understood that the plants have been pruned into shape before planting—that is, the side shoots are to be cut back and the tops reduced one-third. After the growth is completed in the greenhouse they must be removed out-of-doors and water given them in sufficient quantity to keep them from shriveling. Such plants can be brought into the forcing-houses about the first week of November. Peaches require good loam, bone and potash to grow in. If boxes are used they should not be less than a foot deep and a foot wide, and the plants should be set a foot apart—that is, two plants in a box two feet long, and so on. The boxes may be two, three or four feet in length, and I prefer them to pots.

Pearl River, N. Y. *John Thorpe.*

The Best Peaches.—Among the hardier sorts of Peaches, Hill's Chili is of good quality. Morris White and all of this white class are best for canning, and are hardy. Early Rivers endures cold that will destroy many other varieties, while its offspring, Horton's Rivers, is a perfect freestone, although it has its parent's hardiness and excellent quality, with rather firmer flesh. Hynes' Surprise, ripening at the close of the Early Rivers season, is a perfect freestone, and hardy, too, while St. John follows as the earliest yellow sort. Some of these kinds have never failed of a crop even in the most adverse season. Garfield is a new yellow-fleshed Peach of excellent quality and size which promises to become a standard sort.

Geneva, N. Y. *W.*

The Forest.

Forest-policy Abroad.—I.

THE paper which follows was prepared for the meeting of the American Forestry Association, at Washington, last week, by Mr. Gifford Pinchot, and read by him in an abridged form:

The history of the forest has developed itself along similar lines in all the countries of Europe. If we neglect the factors which tended to preserve the European woodlands—factors which have been largely absent in our own country—this history is not without analogy to that of the forests of America. It may be thus briefly summarized:

In early times the demand made upon the forest was small, and the areas cut over easily covered themselves with young growth. The forest renewed itself and maintained its productive power. But as the demand increased the areas cut over increased with it, and the actual re-growth no longer kept pace with the quantity of timber which the forest was called upon to yield. Thus arose the necessity for planting and for a systematic treatment. Again, as the value of forest-land grew higher the separation and demarcation of the rights held by the state, by communes and by private parties naturally took place, and led it in turn to regular systems of forest-protection and management.

All forest-management may be said to rest on two self-evident truths: (1) that trees require many years to reach merchantable size; and (2) that a forest-crop cannot be taken every year from the same land. From the last statement it follows that a definite, far-seeing plan is necessary for the rational management of any forest; from the first, that forest-property is safest under the supervision of some imperishable guardian, or, in other words, of the state.

It would be impossible in this paper even to touch upon the forest-policy of all the nations which might justly claim attention, and I shall refer chiefly to those concerning which I have been fortunate enough to gain some personal knowledge.

To begin with Germany, we find about two-thirds of the forests under more or less complete control of the state. It will not be necessary in dealing with forest-policy in the German empire to treat independently the different states of which it is composed, because one principle lies at the root of forest-policy in each of them, which may be fully illustrated by reference to any one. This principle, special to no country or form of government, holds that "The state is the guardian of all public interests." It is in its interpretation that, for the purposes of this paper, its chief interest lies. From this point of view "public interests" must be taken to mean all interests other than private ones. So understood, this maxim may be said to sum up the forest-policy of nearly all the nations of Europe, as well under republican as under governments of a distinctly paternal character. For its illustration I will describe in few words the forest-organization of the kingdom of Prussia.

Covering an area of some 20,000,000 acres, the forests of Prussia occupy twenty-three per cent. of the total surface of the country. Their ownership—a point of capital importance in relation to our subject—is divided as follows: To the state belong nearly 6,000,000 acres, or twenty-nine per cent.; to towns, village communities and other public bodies, sixteen per cent., and to private owners rather more than half the total area, or fifty-five per cent.

The relation of the state to the forests which it owns is simple and rational. Holding it as a duty to preserve them for the present share which they take in the economy of the nation, the state has recognized also the obligation to hand down its forest-wealth unimpaired to future generations. It has recognized and respected equally the place which the forest holds in relation to agriculture and in the economy of nature, and hence feels itself doubly bound to protect its woodlands. It has, therefore, steadily refused to deliver them to more or less speedy destruction by allowing them to pass into the hands of shorter lived and less provident owners. Even in the times of greatest financial difficulty, when Prussia was

overrun and nearly annihilated by the French, the idea of selling the state forests was never seriously entertained.

But the Government of Prussia has not stopped here. Protection, standing alone, is irrational and incomplete. The cases where a forest reaches its highest usefulness by simply existing, are rare. The immense capital which the state woodlands represent is not permitted to lie idle, and the forest as a timber producer has taken its place among the permanent features of the land. The Government has done the only wise thing by managing its own forests through its own forest-officers.

The organization of the Forest Service is briefly as follows: At its head stands the Department, or, more correctly, the Ministry of Agriculture, which exercises general supervision over forest-affairs through the medium of the Oberlandforstmeister, Chief of the Forest Service. Next in authority is the Bezirksregierung, a council in charge of one of the thirty-five minor divisions of the Prussian state, which has full control over forest-business within its sphere of action. The members of the controlling staff, the Oberforstemeister and Forstmeister, are also members of this council. Their duties lie in the inspection of the officers of the executive staff, of whom there are 681 in Prussia. These officers, styled "Oberförster," are charged with the actual management of the public forest-lands, and it is on them that the security of public interests in the forest chiefly rests. Upon their selection and education the utmost care and forethought are expended.

Space does not permit me to enter into a full description of a system which has produced, perhaps, the most efficient forest-staff of the present day, and, indeed, the subject has been more than once treated in American publications. Briefly stated, their course of training begins after graduation from a gymnasium, with a year of practical work under some experienced Oberförster. Great stress is rightly laid on this year of preparatory work, chiefly because of the vastly greater force and reality which it gives the subsequent theoretical teaching. As one who has suffered from the lack of it, I may, perhaps, be permitted to bear my testimony to the value of the custom, which is, unfortunately, less widely extended than its merits deserve, but which I hope to see one day established in the forest-schools of our land. The young Prussian forester, who has had the good fortune to pass through this preliminary year, next spends two years at a forest-school of recognized merit, such as Munich, Münden or Giessen, and then one year at a university. Then comes the first state examination, which demands, besides a goodly share of theoretical knowledge, large proofs of efficiency in practical detail. It is followed by at least two years of travel and work, during which the candidate, now promoted to the title of Referenda, must take part during five months in the practical administration of a forest-range, and spend four months in the preparation of working plans, besides giving half a year to the active duties of an ordinary forest-guard. At the end of this rather long period of preparation comes the much dreaded final examination, after which the Referenda becomes Forest-Assessor, and is at length eligible for serious paid employment. The actual career of the forester can hardly be said to begin, however, until the appointment as Oberförster, for which the Assessor has no sort of guarantee, and which may delay its coming for from six to twenty years. That once obtained, the chance of promotion lies open, and includes every grade up to the highest. Still, it must be said that as a rule the Prussian Oberförster is wholly satisfied with his position, and very often unwilling to exchange it for one of greater honor and profit. The stimulus which ambition fails to give is supplied by the admirable esprit de corps which pervades the whole body of forest-officers, and forms here, as elsewhere, the best security for the efficiency and healthy tone of the service.

Immediately subordinate to the members of the Executive Staff are the various grades of forest-guards, upon whom the protection of the forest directly and exclusively rests. "The forester" (I quote from the Service Instructions) "must protect the beat entrusted to him against unlawful utilization, theft and injury, and see to it that the forest and game laws are observed. He is charged with the execution of the felling, planting and other forest-work, under the orders of the Oberförster, and he alone delivers all forest-produce to the persons qualified to receive it on receipt of written instructions."

The training of the Protective Staff is provided for with a care which, in any other land, might be thought more suitable for officers of a higher grade, and a period of preparation only less long than that for Oberförster stands before the beginner.

Such is in outline the organization of the Prussian Forest-service. The principles upon which it rests are thus stated by Donne, now Oberlandforstmeister, in a work which carries all the weight of an official document without being actually such. He says: "The fundamental rules for the management of state forests are these: First, to keep rigidly within the bounds of conservative treatment, and, secondly, to attain, consistently with such treatment, the greatest output of most useful products in the shortest time." And again, "The state believes itself bound, in the administration of its forests, to keep in view the common good of the people, and that as well with respect to the lasting satisfaction of the demand for timber and other forest-produce as to the numerous other purposes which the forest serves. It holds fast the duty to treat the Government woodlands as a trust held for the nation as a whole, to the end that it may enjoy for the present the highest satisfaction of its needs for forest-produce and the protection which the forest gives, and for all future time at least an equal share of equal blessings."

Correspondence.

The Holiday Flower Trade in Philadelphia.

To the Editor of GARDEN AND FOREST:

Sir.—The holiday trade of the florists seems to have been satisfactory this season, and as usual it marks a step forward both in quality and variety of the plants and flowers disposed of.

Flowers as holiday gifts are always acceptable, though it must be admitted that American Beauty Roses at $18 a dozen are in the nature of luxuries; but there is so great a variety of other flowers from which to choose that a very pretty box of assorted flowers can always be had for a moderate sum, and these special prices only rule on special occasions.

Probably owing to the bright weather which has prevailed during December cut flowers have been more than usually plentiful, Roses, of course, heading the list since the Chrysanthemum season has waned, and at the present time (December 30th) good flowers can be had of American Beauty, The Bride, Madame de Watteville, La France, Duchess of Albany, Madame Hoste, Catherine Mermet, Papa Gontier, Perle des Jardins, and among the Hybrid Perpetuals, Madame Gabriel Luizet, Mrs. John Laing and Ulrich Brunner, these being considered among the regular stock sorts for forcing. Speaking of Chrysanthemums reminds me that, though the season for these flowers is near its end, yet there are some still in the market, though of rather indifferent quality.

Carnations are in good supply, though first-class flowers with long stems command good figures, and these, like the Roses, may be had in considerable variety. The march of improvement is continued among the Carnations, too, and Philadelphia will show some fine seedlings within a season or two.

Rather out of the common was a wedding decoration during holiday week in which Pansies were the predominating flowers, the bridal flowers being white Pansies, while the maids of honor carried fancy baskets filled with colored Pansies, and the same flower was used as far as possible throughout the house decoration. Some effort was required to secure Pansies enough for such a purpose so early in the season, but the enterprising firm to whom the order was entrusted managed to execute it satisfactorily.

Lilies-of-the-Valley, Roman Hyacinths, Paper White Narcissus and single Daffodils are plentiful, as are also Violets. The latter may always be considered among the favorite flowers, so to speak, and in Philadelphia up to some two or three years past single Violets have been most in demand; but the taste for double ones is rapidly growing, and they will probably supersede the single ones in a few years.

Some sprays of White Lilac are to be had, but these are not forced to any great extent about here, but mostly come from New York.

Smilax continues in demand for greenery, but in fine arrangements it has been displaced to a considerable degree by the graceful and feathery festoons of *Asparagus plumosus*, for, while the latter is much lighter and more delicate in appearance than the Smilax, it is much more lasting.

A few Orchid flowers, mostly Cypripediums and Oncidiums, are to be seen; but these will never be the flower for the million, for few, if any, species are sufficiently prolific in flowers to make them remunerative if sold at a low figure.

Different fashions in the way of sending flowers seem to prevail in different localities. Some florists report a considerable increase in the call for baskets of flowers, while others find boxes of loose flowers in greatest request. Perhaps the

latter way of sending the gift is preferable, as it permits the happy recipients of the boxes the additional pleasure of arranging the flowers to their individual taste.

In plants many sales are reported, a specimen Palm placed in an ornamental pot making an admirable gift, and it is naturally a much more lasting one than cut flowers could be. *Areca lutescens, Livistonia Chinensis* and the Kentias are the favorites for this purpose, and are used in all sizes from four-inch pots up.

Another popular plant is *Dracæna fragrans*, as this also is an admirable house-plant when well grown. Quite a number of young plants of *Araucaria excelsa*, from one to three feet in height and grown in six or eight-inch pots, have been sold during the present season, and charming miniature trees they are too, their light green color giving a very pleasing effect in house decoration. Some early-flowered Azaleas, mostly white, are also among the available plants for Christmas and New Year gifts, and nicely shaped little standards in six or eight-inch pots seem doubly attractive so early in the season.

Holmesburg, Pa. *W. H. Taplin.*

Winter in Los Angeles.

To the Editor of Garden and Forest:

Sir.—Lovers of fruit and flowers find much to enjoy in this favored locality. On my arrival here, November 1st, Muscat grapes were abundant. The season for these is now over, and the market is supplied with three or four varieties of excellent quality from localities further north. On the first of November a limited quantity of second-crop blackberries and raspberries were seen, with a moderate supply of strawberries, which, though not equal to those grown in the east, are exceedingly enjoyable at this season of the year.

Among the fruits which are in season at Christmas-time here are strawberries, fresh figs, guavas, Japanese persimmons, oranges, lemons, limes, apples and pears. Oranges will not be at their best before February.

This morning I gathered fairly good flowers of *Nymphæa Zanzibarensis* and *N. azurea* from my garden and find in bloom Roses, Heliotropes, Geraniums, *Jasminum grandiflorum, Plumbago Capensis* and its white variety, *Tecoma Capensis, Dahlia arborea, Hibiscus Sinensis*, with Ageratums, Abutilons, Fuchsias and Violets. Poinsettias are a blaze of scarlet. In the garden of Mr. J. C. Harvey, an enthusiastic amateur, is a mass of these flowers eight feet high and ten feet through. In another garden I measured one head which was eighteen inches in diameter. In the garden of Judge Charles Silent is a plant of *Bignonia venusta*, covering a space ten by thirty feet, which is now a mass of glowing deep orange color. A somewhat rare plant in cultivation here is *Solanum Wendlandii*, a climber with lovely blue flowers two inches in diameter, in clusters six or eight inches across. A fence about fifty feet long covered from one end to the other with this vine is a charming sight. In the country the farmers are busy with the plow, and the fields are green with springing grass and new sown grain. The season for abundant wild flowers has not yet arrived, though in the foot-hills there still remain a few composites and a remnant of the scarlet *Zauschneria Californica*. In one of my rambles I found the dead stalks of *Delphinium nudicaule*, six feet high, which must have been a fine sight when in bloom.

Los Angeles, Cal. *E. D. Sturtevant.*

Cypripedium spectabile from Seed.

To the Editor of Garden and Forest:

Sir.—In your issue of November 26th there is an interesting note from Mr. Hill, of Fairview, West Virginia, about *Cypripedium spectabile*, in which he notes as one of the probable causes of its being rarely seen in cultivation that it rarely bears fertile seed. On this point perhaps my experience with the same plant would be interesting to those who enjoy the cultivation of our wild flowers.

A few years ago I had in my garden quite a number of these Cypripediums which I had gathered in the woods and transplanted, and which seemed to be well suited with their new home, for many of them grew to be larger plants and flowered better than those I have generally found growing wild. The growth was very strong, and many of the plants bore two blossoms on their spikes. Some of the blossoms of the stronger plants I fertilized, and they produced good seed-pods, which, when ripe and just bursting, I took off and scattered their seeds over the bed where the plants were growing. This planting was done late in the fall, of course, and for the winter a light covering of leaves gathered from the lawn was put over the whole bed. Most of the covering was taken off again in the spring, and the bed was left without disturbance beyond the keeping out of weeds, which were pulled up while yet small.

During the season following this first planting I was not positive that any seeds had started, and more blossoms were fertilized and more seeds sown as before, and in the second season after the first planting I was assured that I had seedlings growing, and had, moreover, two sizes of young plants, the larger being those of the first fall's sowing, which I had not been able to recognize the summer before, and the smaller ones plants that I now knew to be seedlings in their first year.

In this manner I was getting quite a number of seedlings, when, unfortunately, a change of residence obliged me to move my bed of these plants, and all were lost. The care that I had given to these seedlings was very slight, and probably many were lost in pulling out the weeds, and yet I had more than a dozen of them in the second year after sowing; and I am quite sure that with good care and in a good location this plant could be multiplied very rapidly from seed.

Chicago, Ill. *F. J. Le Moyne.*

Periodical Literature.

The most interesting article for American readers in the December issue of the *Kew Bulletin of Miscellaneous Information* is devoted to an account of the production of prunes in the south of France. The prune industry of California is developing enormously, and all that is required now to give California prunes a commanding position in the markets of the world is the adoption of the careful methods by which the French have gained their well deserved reputation in such matters. In this connection the following extracts from the *Bulletin* will be read, perhaps, with interest. They are from the pen of Mr. M. W. Colchester-Wemyss, who has studied with extreme care the prune industry of southern France with a view of ascertaining the possibility of starting a similar industry in England.

"About sixty miles above Bordeaux there falls into the Garonne a fine river which, taking its rise among the mountains of Cevennes, follows a course of some 150 miles, until its junction with the Garonne. This river is called the Lot, and the two rivers together confer the name on the Department known as Lot and Garonne. For several miles along the lower reaches of the Lot, and in the country immediately adjacent to the spot where it enters the Garonne, is produced the fruit known, when it has been specially prepared, as 'French plums.' For over 100 years the industry has been fixed in this locality, and still, with the sole exception of a valley in Servia, there is no other place where the same trees are cultivated. The tree is called 'Prunier d'ente.' 'Enter' is an old French word meaning to graft, and it is simply so called because this particular species was formerly the only plum in this district that ever was grafted. Now there are, practically, no plums other than the 'Prunes d'ente' grown in the neighborhood. Higher up the Garonne, round the old town of Agen and in other parts of southern France, another plum, the 'Prunier commun,' is largely grown, and its fruit treated similarly to that of the 'Prunier d'ente,' but the produce is very inferior and only suitable for stewing; but I believe that nowhere except in the Servian Valley is the true 'Prune d'ente' at present grown; and though many experiments have been made with other varieties, no others have yet been discovered that will yield the established qualities of the 'French plums.' It is rather capricious in its growth, for its area of cultivation does not extend very far from the river bank. It appears to delight in a rich alluvial soil of a rather sandy nature, but which contains a sufficiency of clay to make it very retentive of moisture. The centre of the 'French plum' district may be said to be at Clairac, a quaint little old-fashioned town built on a steep hill-side overlooking the Lot, almost more Spanish looking than French, its houses shaded from the fierce southern sun with wide outspreading eaves and flower-clad balconies.

"In this and the neighboring communes the metayer system is in full operation, and it appears to work well and harmoniously. The owner of the land engages the metayer and supplies all the implements and stock required for the holding; he also keeps the buildings in repair, including the house used by the metayer. The latter finds the whole of the labor except such extra labor as is needed during harvest-time. The

metayer, during the year, has entire control of the farm, and buys and sells, subject, if required, to the consent of the owner. He renders account of all produce from the holding consumed by himself and family, and at the end of the year the balance of profit is divided equally between the owner and the metayer. During the last few years the metayers have fared badly, for the Phylloxera has devastated the vineyards, and sad it is to see acres and acres of land excellent for the growth of grapes, but fit for little else, now deprived of those crops which formerly so well repaid the cost of cultivation. The holdings vary in extent from ten acres to sometimes fifty and sixty, and on every holding in the lowlands are to be seen rows of the 'Prunier d'ente.' The rows are separated from each other by long strips of cultivated land where the mild fawn-colored oxen lazily drag the most old-fashioned and primitive implements over the easily broken soil. The plums are long-shaped, the end to which the stalk is attached being very much the more pointed; color red, deepening into a rich violet as the plum ripens; the skin is extremely tough, without being very thick or hard; the flesh very firm, containing a large amount of saccharine; the specific gravity much less than that of several varieties of English plums with which I made comparison.

"The tree is a very slow grower, requiring ten years to bring it into full bearing, though I saw some trees six years old, very favorably situated, with a fair crop of fruit on them. The fruit also matures very slowly, and is not ripe till all other fruits in the district, apricots, greem gages, peaches, have ripened. The plums are picked when just ripe, before the flesh has begun to soften, they are placed on 'claies' or trays, one layer of plums on each 'claie.' The 'claies' are made either of strips of wood or of wicker-work, and are either triangular or round. They are a little deeper than the thickness of a plum, so that when not in the ovens they can be safely placed upon each other. The 'claies' when filled are arranged upon the bottom of the 'fours' or inside the 'étuves,' and the operation commences. Each homestead has a building in which are placed the 'fours' and also the 'étuve,' if the metayer possesses one. The 'fours' are simply like very large ordinary bread-ovens. They are usually built in pairs, each one about ten feet long and four feet wide; they are heated by burning wood inside them; the ashes are cleared out and the 'claies' placed inside. The 'étuves' are closets of variable dimensions, with different appliances for holding the 'claies.' They have a small furnace with pipes underneath the floor for heating. There seems to be a preference for the 'fours,' though the 'étuves' are simpler and more convenient in every way.

"When the fresh fruit is put in the temperature should be about 100 degrees Fahrenheit. When the plums have been inside for about a couple of hours they assume a peculiar puffy appearance. The 'claies' are then withdrawn, the fruit turned by holding an empty 'claie' upside down close over a full one, and then turning them both over. After cooling, the 'claies' are again put into the 'four'; this time at a temperature of about 135 degrees; again withdrawn, turned, cooled, and put in at a temperatare of about 170 degrees; and this operation is continued until the plums have been dried. Some dry more rapidly than others, and they are picked out as they are ready. The more slowly the operation is performed, and the oftener the plums are put into the 'four,' the better will be the result.

"When they are ready the plums are sorted out into various grades, according to the number (30, 35, 40, 45, 50, 55 or more up to about 130) that it will take to make up the French pound, for curiously enough the old French measure is adhered to. They are put into sacks and carried to the markets. Here the merchants come and buy, paying prices varying according to the number of plums required to weigh a pound. Thirty to the pound would be worth about 120 francs the 100 pounds; forty to the pound about 100 francs, and so on down to the very lowest grades, which are not worth more than fifteen francs. The merchants convey the fruit to large, cool, airy warehouses, where it is thrown into bins, and women at long tables are employed sorting over again much more carefully than before. The various grades are then packed separately into casks and are sent to Bordeaux, where the finer qualities are packed carefully in bottles or boxes; the inferior are simply exported in bulk.

"About Agen and in the other districts another tree is cultivated, the 'Prunier commun.' This is a round, violet plum, grown on its own stock. The fruit is prepared in a similar manner to the 'Prune d'ente,' but is very inferior and is only fit for stewing. Enormous quantities are consumed by the peasants in the north and east of France."

Meetings of Societies.

The American Forestry Association.

THE ninth annual meeting of this Association was held at Washington on December 30th, 1890. A summer meeting having been held at Quebec September 2d-6th, the present meeting was primarily for business. At the morning session at the Department of Agriculture members were present from Colorado, Connecticut, Massachusetts, Minnesota, New York, Pennsylvania, South Carolina, Vermont and the District of Columbia. Owing to official duties Governor James A. Beaver, of Pennsylvania, President of the Association, was unable to attend, and Honorable Edwin Willets, the local Vice-President, occupied the chair. The report of the Executive Committee detailed the past year's growth of the Association, now numbering 225 active members, and referred to the increasing popular interest and belief in the necessity of forest-preservation and management all over the country. Attention was called to the work of the New Hampshire Forest-Commission, the movement for a state forest-park in the Adirondacks, the establishment of the Adirondack League Club, the Sequoia reservation and the appeal of the citizens and the Forest-Commission in California. The committee's efforts for national legislation have not yet met with the success that was hoped for last spring when the Special Committee of Congress was appointed to consider forestry-legislation. Legislation on the tariff, the elections, etc., having absorbed the attention of Congress and the public, this committee has not yet reported any of the bills before it; and it would look as if the struggle would have to be continued in the next Congress.

Dr. B. G. Northrop, Chairman of the Arbor Day Committee, presented a report on the increased observance of that day and the practical value of the planting done. Hon. Warren Higley, of New York, described the plans of the Adirondack League Club for practical forest-management on its 93,000 acres of woodlands.

At the afternoon session the committee on resolutions and nominations reported a proposed change in the constitution, adding six members at large to the Executive Committee. This was adopted. The following officers were then nominated and elected: President, William Alvord, of San Francisco; Vice-Presidents, Hon. H. G. Joly, Quebec; Dr. Charles Mohr, Alabama; Dr. M. Riordan, Arizona Territory; Abbot Kinney, California; G. H. Parsons, Colorado; Dr. B. G. Northrop, Connecticut; Hon. C. R. Pringle, Georgia; G. W. Minier, Illinois; C. L. Watrous, Iowa; Professor E. A. Popenoe, Kansas; Hon. A. M. Brown, Kentucky; J. D. W. French, Massachusetts; Professor W. J. Beal, Michigan; Hon. C. C. Andrews, Minnesota; Hon. J. Sterling Morton, Nebraska; J. B. Harrison, New Hampshire; W. A. Stiles, New Jersey; Morris K. Jesup, New York; Professor W. R. Lazenby, Ohio; Herbert Welsh, Pennsylvania; L. D. Davis, Rhode Island; Professor H. A. Green, South Carolina; Professor Charles A. Keffer, South Dakota; Hon. T. T. Wright, Tennessee; W. Goodrich Jones, Texas; Dr. Hiram A. Cutting, Vermont; H. C. Putnam, Wisconsin; Hon. Edwin Willets, District of Columbia; Hon. G. W. Allan, Ontario; Treasurer, Dr. H. M. Fisher, Philadelphia; Recording Secretary, Dr. N. H. Egleston, Washington; Corresponding Secretary, Edward A. Bowers, Washington; Executive Committee at large, B. E. Fernow, H. B. Ayres, Colonel E. T. Ensign, W. G. Pellew, Charles C. Binney, Hon. Warren Higley.

Statements were then made by various members as to forestry interests in their states, and the Association was invited to meet next summer at Denver, Colorado, which invitation was accepted.

The evening session was held conjointly with the American Economic Association at the National Museum. Professor E. J. James, of the latter body, was prevented by indisposition from reading his paper on the duty of Government in regard to forests. Very interesting papers were read by Gifford Pinchot, of New York, who is now studying forestry in Europe, on "Government Forestry Abroad;" by Edward A. Bowers, the new Corresponding Secretary and formerly an inspector of public lands, on "The Present Condition of the National Forests," and by B. E. Fernow, Chief of the Forestry Division, on "The Feasibility of American Forest-administration."

Resolutions were adopted urging the passage of a bill for the reservation and management of the national forests, the proper protection and enlargement of the Yosemite and Sequoia parks, and the state reservation of forest-lands in New Hampshire and New York. Congress was also petitioned to enact the Senate bill for changing the boundaries of the Yellowstone Park without the objectionable amendments added by the House committee.

Notes.

It is said that Orange growers have discovered a process by which an orange picked while green can be colored a rich yellow in forty-eight hours. No doubt consumers will continue to prefer ripe oranges to green ones artificially jaundiced.

Professor Marshall Ward's excellent address on "Elementary Botany in General Education," delivered not long ago at Leeds, England, and recently quoted in our columns, is reported more at length in the *Popular Science Monthly* for January.

The new park system which the City of Montevideo is about to inaugurate under the direction of the distinguished French artist, Edouard André, consists of two parks each of 175 acres, of four smaller parks varying from twenty-five to sixty acres each, of twelve public squares, and of a series of boulevards and broad avenues to connect the old and new parts of the city.

A dwarf form of the Calla Lily (*Richardia Æthiopica*), which was certificated some time ago by the Royal Horticultural Society, is highly commended in the *Gardeners' Chronicle*. It is a seedling, bears a perfect spathe, and is only nine inches or a foot in height. It flowers very freely, has beautiful foliage, and it is so small that it has altogether a different effect from that of the ordinary Calla.

The question as to what time of the year Pompeii was overwhelmed has puzzled antiquarians, but according to the *Gardeners' Chronicle* a late discovery enables us to answer it with some degree of certainty. The trunk of a tree bearing berries has been discovered among the ashes, the berries giving the clue to the nature of the tree, which was the true or Bay Laurel (*Laurus nobilis*). From the degree of maturity of the berries it is, moreover, surmised that the eruption took place in November.

Episcia maculata, a plant of the order Gesneraceæ and a native of British Guiana, first flowered at Kew last summer. In a paper on its floral biology recently published by Professor F. W. Oliver, he says that it is remarkable from the fact that the flowers do not open, as the front lobe of the corolla remains folded back, closing the mouth like a cork. Notwithstanding, its arrangements are for cross-fertilization through insect agency of some sort. The flower is believed to be unique in being thus at once closed and cross-fertilized.

When describing the Mulberry-trees in the province of Ssuch'uan, in western China, Mr. Alexander Hosie says: "Here I observed an ingenious device for obtaining young trees from the old. Round a promising branch of a tree a piece of Bamboo about a foot in length, which has previously been divided into two parts along its length, is tied, and the hollow between the branch and the interior of the Bamboo filled with mould. In a short time suckers leave the branch and descend into the mould, and when they are sufficiently developed the branch is cut off and planted, the suckers forming the roots of the young tree."

One of the last papers written by the late Professor Proctor and published in *Knowledge* says (we quote from a summary in the *Popular Science Monthly*): "In all the vegetable world color seems to be in all cases dependent on the requirements of propagation. Thus, where seeds are diffused by animals, as with the berries, we find the fruits brightly colored, to attract the attention of the animal distributors. It will be noticed that when seeds are distributed by the winds, bright colors are not found in the fruit, even though the plant be closely allied to species distributed by animals in which the bright colors are present."

The latest bulletin from the Cornell University Experiment Station gives some account of the Pear-leaf blister, which appears on the leaves in the form of dark reddish spots an eighth of an inch or more in diameter, and are produced by a gall-mite, which has long been known in Europe, but has attracted little attention as yet in this country. The insect is practically invisible to the naked eye, and as it lives within the tissue of the leaves ordinary insecticides cannot reach it. The only promising method of attacking these pests is to prune away and burn the young wood in winter, since it is their habit to quit the leaves as they dry in autumn and collect on the terminal buds, where they remain until spring.

Dr. Byron D. Halsted contemplates the publication of a "Century of Weeds," and hopes to follow it by a second collection showing the seeds of the same species and then to carry on the work until all the annoying and pestiferous plants of America are fully represented in herbaria. American botanists in all parts of the country have been asked to send in lists of the twenty worst weeds in their vicinities, and from their reports the "Century" will be composed. The price has not yet been fixed, but it is expected to be about $8, and Dr. Halsted will be grateful for all words of encouragement, believing that, while the result of his laborious task will be of special value to our agricultural colleges and experiment stations, it will also be of interest to systematic botanists in general.

The last annual report of the Trustees of the Astor Library, in this city, shows that during the year 1889 only 538 readers called for works dealing with agriculture and horticulture, as against 2,748 who called for works on architecture, and 6,762 who desired to study painting, sculpture or archæology. Of students who asked admission to the alcoves for the purpose of more serious research there were fifty-six concerned with architecture, 467 with painting, sculpture and archæology, and only three with agriculture and horticulture. Yet the Library authorities seem to recognize the importance of this department, for while there were fourteen works upon architecture added to the collection during the year and forty-five on the other arts, there were thirty-nine upon agriculture and horticulture. More than half the alcove readers were interested in patents, 5,082 having applied for this purpose, while, with a great gap between, American history came next with 788 students.

Writing of western Pennsylvania in the year 1795 the Marquis De Talleyrand says, in a passage from his "Diary" published in the *Century Magazine* for January: "I was struck with astonishment; less than 150 miles distance from the capital all trace of men's presence disappeared. Wild nature in all its pristine vigor confronted us; forests as old as the world itself; decayed plants and trees covered the very ground where they once grew in wildness; others shooting forth from under the débris of the former and like them destined to decay and rot; thick and intricate branches that often barred our progress; green and luxuriant grass decking the banks of rivers; some large natural meadows; some strange and delicate flowers quite new to me; and here and there the traces of former tornadoes that had carried everything before them. Enormous trees all mowed down in the same direction, extending for some considerable distance, bear witness to the wonderful character of those terrible phenomena." In another passage Talleyrand reports that he saw, "sixty miles from Boston, 6,000 feet of timber exchanged for a bullock."

The *Calcutta Englishman* recently said: "Among the exquisite arts for which the Indian people have long been famous, Sandal-wood carving is one that neither government nor native patronage can rescue from inevitable decay. Parsees have taken up the art in Bombay, and by employing their own methods and enterprise on it have found a market and established a trade, although their work bears no comparison with that of Mysore, the home of the art. The Sandal-wood carvers of Mysore turn out work which is indeed exquisite, and their skill is acquired by slow years of patient practice from boyhood. But the decay of this and other laborious Indian arts is inevitable. The native courts, which used to be the chief patrons of indigenous art, have now the products of all Europe competing for their favor, while, on the other hand, the European markets, which might be open to Indian wares, are impatient of India's tedious methods and stinted supplies. Meanwhile, even conservative India cannot resist the rush of the railway and the whirl of education. Her boys will not sit down for years in one shop without a thought except to perpetuate for generations to come the few and curious ideas of generations foregone. Sandal-wood looks pretty and smells sweet, but the School of Art, with its morning school and its Saturday holiday, is killing the ancient order of Mysore carvers."

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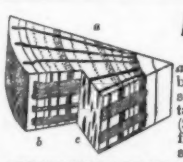

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